

## ABSTRACT

A high-resistance silicon wafer is manufactured in which a gettering ability, mechanical strength, and economical efficiency are excellent and an oxygen thermal donor is effectively prevented from being generated in a heat treatment for forming a circuit, which is implemented on the side of a device maker. A heat treatment for forming an oxygen precipitate nucleus is performed at 500 to 900°C for 5 hours or more in a non-oxidizing atmosphere and a heat treatment for growing an oxygen precipitate is performed at 950 to 1050°C for 10 hours or more on a high-oxygen and carbon-doped high-resistance silicon wafer in which resistivity is 100  $\Omega\text{cm}$  or more, an oxygen concentration is  $14 \times 10^{17}$  atoms/cm<sup>3</sup> (ASTM F-121, 1979) or more and a carbon concentration is  $0.5 \times 10^{16}$  atoms/cm<sup>3</sup> or more. By these heat treatments, a remaining oxygen concentration in the wafer is controlled to be  $12 \times 10^{17}$  atoms/cm<sup>3</sup> (ASTM F-121, 1979) or less. Thus, there is provided a high-resistance, low-oxygen and high-strength silicon wafer in which resistivity is 100  $\Omega\text{cm}$  or more and an oxygen precipitate (BMD) having a size of 0.2  $\mu\text{m}$  is formed so as to have high density of  $1 \times 10^4/\text{cm}^2$  or more.